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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,767	06/27/2003	Takeshi Nishimura	4296-164 US	7413

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EXAMINER	
PUTTLITZ, KARL J	

ART UNIT	PAPER NUMBER
1621	

DATE MAILED: 09/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/607,767	NISHIMURA ET AL.	
	Examiner	Art Unit	
	Karl J. Puttlitz	1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 June 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/22/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

"The standard for determining whether the specification meets the enablement requirement [in accordance with the statute] was cast in the Supreme Court decision of *Mineral Separation v. Hyde,* 242 U.S. 261, 270 (1916) which postured the question: is the experimentation needed to practice the invention undue or unreasonable? That standard is still the one to be applied. *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988). Accordingly, even though the statute does not use the term "undue experimentation," it has been interpreted to require that the claimed invention be enabled so that any person skilled in the art can make and use the invention without undue experimentation. *In re Wands*, 858 F.2d at 737, 8 USPQ2d at 1404 (Fed. Cir. 1988).

In the instant case the claims cover randok steps for production of acrylic acid without explicitly describing an order for the steps.

The specification and the examples do not provide sufficient disclosure that would provide one of ordinary skill guidance to practice the invention, given the random possible permutations of the claimed steps. For example, the specification does not enable those of ordinary skill to practice the invention where the thermal decomposition of oligomer contaminents comes before the step for obtaining crude acrylic acid by dehydration..

The examiner understands that there is no requirement that the specification disclose every possible embodiment if there is sufficient guidance given by knowledge in the art (See M.P.E.P. § 2164.05(a) "[t]he specification need not disclose what is well-known to those skilled in the art and preferably omits that which is well-known to those skilled and already available to the public. *In re Buchner*, 929 F.2d 660, 661, 18 USPQ2d 1331, 1332 (Fed. Cir. 1991); *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384, 231 USPQ 81, 94 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987); and *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1463, 221 USPQ 481, 489 (Fed. Cir. 1984).").

However, the instant case goes beyond what is known in the art, because the specification does not offer any guidance on how one of ordinary skill would go about practicing the invention in any order.

Applicant is reminded of the heightened enablement for chemical inventions. Specifically, the amount of guidance or direction needed to enable the invention is inversely related to the amount of knowledge in the state of the art as well as the predictability in the art. *In re Fisher*, 427 F.2d 833, 839, 166

USPQ 18, 24 (CCPA 1970). The "amount of guidance or direction" refers to that information in the application, as originally filed, that teaches exactly how to make or use the invention. The more that is known in the prior art about the nature of the invention, how to make, and how to use the invention, and the more predictable the art is, the less information needs to be explicitly stated in the specification. In contrast, if little is known in the prior art about the nature of the invention and the art is unpredictable, the specification would need more detail as to how to make and use the invention in order to be enabling. [I]n the field of chemistry generally, there may be times when the well-known unpredictability of chemical reactions will alone be enough to create a reasonable doubt as to the accuracy of a particular broad statement put forward as enabling support for a claim. This will especially be the case where the statement is, on its face, contrary to generally accepted scientific principles. Most often, additional factors, such as the teachings in pertinent references, will be available to substantiate any doubts that the asserted scope of objective enablement is in fact commensurate with the scope of protection sought and to support any demands based thereon for proof. [Footnote omitted.]

Here, the requirement for enablement is not met since the claims go far beyond the enabling disclosure.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "said oligomer" in claim 1, step ii) lacks antecedent basis.

Claim step i) recites supplying a raw material and a reflux of said distilling column. However, it is unclear as to what is being supplied with the raw material or reflux. Claims 4 and 6 recite that a tank and a cooler are installed. However, the claim does not recite what the tank and cooler do, or what they are connected to

Claims 5 and 7 recite using acrylic acid of high purity. However, the claim lacks an essential step since it does not clearly recite how the acrylic acid is used.

Claims 5 and 7 recite polyacrylic acid (salt). It is unclear if applicant intends to cover polyacrylic acid or its salts.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,252,110 to Uemura et al. (Uemura).

The claims are drawn to a method for the production of acrylic acid which comprises (a) a step for obtaining an acrylic acid-containing gas by catalytic gas phase oxidation, (b) a step for obtaining an aqueous acryliç acid-containing solution by absorbing the acrylic acid-containing gas with an aqueous absorbing solvent, (c) a step for obtaining crude acrylic acid d by dehydration and/or removing low boiling substance from said aqueous acrylic acid containing solution, (d) a step for obtaining acrylic acid and a high boiling; substance containing solution by removing the hiqh-boilinq substance from said crude acrylic acid, and (e) a step for recovering acrylic acid by thermally decomposing an acrylic acid oligomer contained in said high boiling substance-containing solution, the method is characterized by performing at least either w of

(i) a step for introducing a polymerization inhibitor to a stage other than the stage for supplying a raw material and the stage for supplying a reflux of said distilling column or

(ii) a step for supplying the acrylic acid recovered by thermally decomposing said oligomer to said step for obtaining crude acrylic acid by dehydration.

Uemura teaches that a production method of high purity acrylic acid normally consists of an oxidation step for producing acrylic acid through gas-phase catalytic oxidation of propylene and/or acrolein; a collection step of contacting the acrylic acid-containing gas with water and collecting the acrylic acid in the form of an aqueous acrylic acid solution; an azeotropic separation

step of distilling the aqueous acrylic acid solution in an azeotropic separation column in the presence of an azeotropic solvent and recovering crude acrylic acid from bottom part of said column; and a purification step of purifying the crude acrylic acid. This purification step is normally conducted using a high boiling impurities separation column for removing high boiling impurities in the crude acrylic acid and optionally an acetic acid separation column for further removing acetic acid. See column 1, lines 49-63.

This patent also teaches introducing bottom liquid a thin film vaporizer into a pyrolyzing tank, decomposing acrylic acid dimer in a bottom liquid and thereafter recirculating at least a part of bottom the liquid of said pyrolyzing tank into said thin film vaporizer and/or the distillation column. See column 3, lines 36-44.

Fig.1 shows tanks in the process.

The foregoing anticipates the rejected claims within the meaning of section 102.

Claim Rejections - 35 USC § 103

Claims 3, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uemura.

The rejected claims coverthose embodiments wherein the acxrylic acid that cis recovered is converted to polyacylic acid or esters of acrylic acid. Notwithstanding the fact the Uemura does not teach the additional embodiments,

one of ordinary skill would be motivated to further produce polyacylic acid or esters of acrylic acid since these products are useful.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl J. Puttlitz whose telephone number is (571) 272-0645. The examiner can normally be reached on Monday-Friday (alternate).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on (571) 272-0646.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1235.

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